

T H E  
L I G A T U R E

P R E F E R A B L E T O

A G A R I C,

I N

Securing the BLOOD-VESSELS  
after AMPUTATIONS:

In which

The dangerous and fatal Consequences that may attend a Dependence upon the latter, are offered to the Consideration of Surgeons; and the Experiments made at *Paris* by Monsieur *Faget*, and at *London* by Mr. *Warner*, proved to be insufficient to authorize such a Practice.

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By HENRY PARKER of *Sandwich*, sometime Surgeon of the Royal Navy.

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L O N D O N,

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## T H E

## P R E F A C E.

*T*H E following pamphlet is intended as a precaution to young surgeons (and such others who have had but few opportunities of performing amputations of the limbs) against inconsiderately falling into the new method of using Agaric of the oak, instead of the needle and ligature, to restrain the hæmorrhage from large arteries. And this, I hope, will not be thought impertinent; especially if it be considered, how apt we in general are, implicitly, to acquiesce in an opinion that is countenanced and supported by a person of eminence in his profession; and that the propagation of an error



*error by such an one, may be far more detrimental in its consequences, than from a man of less distinction.*

*If, by my means, but one life should be saved, which would otherwise have been thrown away, either by the inadvertency of an operator, or his too ready assent to a practice not yet sufficiently established, I shall think myself amply rewarded.*

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# THE L I G A T U R E

PREFERABLE TO

A G A R I C, &c.

**S**URGERY has, of late years, received a great many, and very considerable improvements in most of its principal Operations; but few, or none, I think, have been of more signal service to mankind, or done greater honour to their inventors, than those made upon amputations; in changing the single incision for the double one, and the actual cautery for the ligature. This last has now found a formidable rival in the Agaric of the oak; the extraordinary virtues of  
B which,



which, Monsieur Faget at Paris, and Mr. Warner at London, have taken great pains to demonstrate by experiments. But as, on the one hand, a discovery that may be of so much importance to the community, as these gentlemen seem to make no doubt this may be, ought to meet with all due encouragement, both in justice to the public, and its ingenious author; so, on the other, for the same reasons, one that is known to have saved the lives of thousands (tho' a little older) should not be exploded, without a thorough conviction of its inferiority. Most young surgeons have a strong propensity to innovations in practice, upon a small encouragement from men of character; and this may be laudable in cases of small consequence: but where the life of the patient is at stake, (as it always is in the amputation of a limb) they cannot be too cautious how they deviate from the general method; particularly,

ticularly, in so very material a point, as the securing the large blood-vessels. That this may be effected with less danger by Ligature, than Agaric of the oak, I shall endeavour to shew from the experiments of Monsieur Faget and Mr. Warner.

The first of these gentlemen tells us, that two waggoners were brought to the hospital of the charity, each of which had one leg fractured in so bad a manner as to require immediate amputation, which was accordingly performed, and two pieces of Mr. Broffard's astringent (Agaric) applied to the two arteries ; the stump was then covered with a linen bag, filled lightly with the same astringent powder, and, over all, the common dressings.

The astringent succeeded as to stopping the blood, but both the poor men lost their lives ; one on the fifth,



and the other the ninth day from the operations. The same misfortune, it must be acknowledged, might possibly have happened if the ligature had been used : but the high probability that it would not, at least to both, (provided the operations were performed in other respects properly, as I suppose they were, and the men of a tolerable habit of body, which is not denied) no surgeon, who has been conversant in amputations, will presume to question ; all such being thoroughly convinced how greatly the danger of this operation differs when performed upon an healthy subject, immediately after a compound fracture, or any other injury requiring it ; and upon one, the texture of whose blood is broken, or impaired, by a profuse discharge of matter, pain, an hectic fever, or other causes. This disparity of danger in amputations, I have experienced, in a great number of instances,

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in some of the most considerable sea engagements, during the late war ; in all which I had the good fortune to save nine in ten, at least, of those who underwent the operation directly after the injury requiring it was received ; when not more than one in three recovered, where it was deferred two or three days, either on account of their unwillingness to submit sooner, or from the hope I entertained that a cure might be effected without it.

If then it be granted that the consequent danger of an amputation is much lessened by the operation's being performed upon an healthy subject, immediately after the injury requiring it is received ; it follows, that either the poor waggoners were uncommonly unfortunate, or that the Agaric occasioned their deaths. That the latter might possibly, and not improbably, be the case, may, I think, be

be fairly presumed, from considering, with a little attention, some of the principal causes of a person's death who does not undergo the operation till several days after a compound fracture of the leg, for example, with great contusion; and comparing them with the effects of the Agaric. The laceration of the parts will, at first, occasion intense pain, which will, in great measure, be prevented from abating, by the tension of the teguments and muscles; which is brought on by the tone of their vessels being destroyed, or much hurt, and consequently the circulation of their juices totally obstructed, or greatly impeded.

The pain, by causing an extraordinary contraction of the solids in general, and the tension, by obstructing the fluids in the contused parts in particular, will, for reasons extremely obvious, bring on a symptomatic



tic fever: which fever will continue to increase so long as these causes subsist; and if they are not removed, or lessened, in a few days, either by a proper digestion of the wound, or an abscess forming in the neighbouring parts; the fever, which was at first only symptomatic, will tend to putrefaction, and death inevitably ensue, unless the patient can be saved by amputating the limb, which, in these unhappy circumstances, is commonly the last resource, but, I fear, very rarely with the wished for success; for the blood being, at the time of the operation, in an inflamed state, and perhaps the whole limb tumified to a considerable degree, the wound cannot be brought to suppurate properly, but will have a strong tendency to gangrene; and the texture of the whole mass being broken by the increased force of the circulation, it will become incapable of separating the animal spirits; in consequence of which,

which, the patient will grow delirious, the solids relaxed, and, cold sweats coming on, death will soon follow. Now it is well known, that nothing is more common, than for very different causes to produce the same, or nearly the same effects: and that the two cases above-mentioned were instances of it, appears extremely probable, from Monsieur Faget's own remarks upon the manner of the Agaric's operating; which he tells us was by coagulating the blood, in the large arteries, a vast height, (an inch and half in one, and four inches in the other) and contracting them to such a degree as to render their mouths scarcely discernable; and if it had this power upon the largest vessels, it is easy (as he rightly observes) to imagine how it acted upon the smallest. From his own words then it may be reasonably infer'd, that at the time the wounds should have begun to digest, they were lessened greatly in their super-  
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ficies,



ficies, by the contraction of all the vessels of whatever species, (the stumps being covered with the powder of Agaric) and the blood and juices in them coagulated an inch high upon a moderate computation; in this situation it was absolutely impossible to bring on a proper discharge of matter, without which the symptomatic fever (which more or less attends all amputations) could not be taken off; but, on the contrary, would continue to increase till it degenerated into a putrid one, which would bring on a delirium, convulsions, colliquative sweats, and the whole train of symptoms which usually precede death. Thus we see that Agaric, applied to the whole surface of the stump in amputation, though performed immediately after the accident, may be productive of the same bad consequences, as the delaying the operation three or four days, for the most part, is.

But these objections to the use of the Agaric, it may be said, are in a great degree, if not altogether removed, by Mr. Warner's method of applying it to the arteries only, and dressing the wound, in other respects, in the usual manner. But, granting this to be true, there are others may arise, which will be found abundantly sufficient to abolish this practice; notwithstanding the success that gentleman has had in amputating five legs and a breast: for it is very observable, that in all these cases, the patient, either by the long continuance of the disease, or a large discharge of matter, were brought into so low a state, as to render the circulation very weak and languid; on which account the Agaric might be found capable of restraining the hæmorrhage. And I am fully persuaded, (if surgeons could be found who would be rash enough to risque the lives of their patients) that dry lint, dip'd in fine flower, and secured



cured by a proper bandage, would, in such cases, sometimes, prove equally effectual; as we know it is in amputations of the toes and fingers, in which a ligature is seldom wanted.

That the Agaric is not infallible, we learn from Mr. Warner himself, who acknowledges that it did not succeed upon the division of the femoral artery. From hence it follows, that there is a certain degree of velocity in the blood, beyond which this medicine loses its power of acting, at least with effect. It is necessary therefore that the degree of velocity in which the Agaric can be safely depended upon, should be ascertained, before we venture to use it: but this, I believe, will prove exceedingly difficult; for, should it be laid down as a rule, that it may be trusted to in amputations of the leg below the knee, and the arm below the elbow; but not when the operation is performed

above either of those articulations; (as Mr. Warner seems to think) it would be found a very fallacious one: for though it is certain, that the force of the blood, in the same body, is greater or less, in proportion to the larger or smaller diameters of the arteries; yet in different persons, labouring under different disorders, it would frequently happen, that the circulation would be stronger in the tibial and cubital arteries of some, than in the femoral and humeral arteries of others; in which circumstances, amputating below the knee, or elbow, in those, would be as much, or more hazardous than amputating above them in these. So that though the application of Agaric to the blood vessels, after amputations of the limbs, may be sometimes attended with success, yet it will be always precarious, and for that reason unwarrantable.

As



As an encouragement to surgeons to make trial of the Agaric, Mr. Warner asserts, that the patient never runs any sort of risque by the experiment. But from this opinion I must, with submission, beg leave to dissent ; for though I am thoroughly sensible, that no great mischief could ensue from the application of two or three slices of Agaric to the mouths of so many arteries, if these arteries, upon the Agaric's being found ineffectual, were immediately taken up by a needle and ligature ; yet in case the force of the circulation, at the time of amputating the limb, should be so small, as to suffer the Agaric to stop the bleeding for the space of two, three, or four days, and at either of these periods should be so much increased, by the symptomatic fever, as to overcome the power of the medicine, or, in other words, bring on an hæmorrhage, the life of the patient would be in imminent danger : for, not to mention the great hazard there would be

be of his bleeding to death before any proper assistance could possibly be got, the parts would be become too tender, perhaps, to sustain the pressure of a ligature; or if they were not, the taking up the vessels at this time, would be so much more painful than at that of the operation, as to make the consequence exceedingly doubtful.

One of the advantages the Agaric is said to have of the Ligature, is, that it restrains the bleeding without pain. This, it must be confessed, carries with it some shew of reason; but upon reflection, I fancy, it will be thought that the pain occasioned by the tourniquet's being kept tight a considerable time, and repeated twice, thrice, or oftner, as occasion may require, will be nearly, if not altogether, equal to that of the ligature; and much more so, if we add to it the fear and anxiety a patient, who has any sense of danger, must necessarily under-



undergo every time his stump bleeds afresh. But though the preference, in this particular, should be given to the Agaric, and it should continue to be proved by experience that some recover without the ligature, it would be equally absurd to insist upon the propriety of this method, as it would be to pronounce that all abscesses ought to be opened by puncture; because it is less painful than a large incision, and numbers have been cured by that means.

I don't know what may have happened to other surgeons, but this I can affirm, that in above forty amputations that have fallen under my care, I have never known any bad symptoms supervene, that could, with any degree of certainty, be attributed to the ligature: 'tis true the pain of it is severe, but then it is almost momentary, for we seldom observe the patient to make any extraordinary complaint

complaint till the inclosed parts begin to be compressed, after which every one knows how soon the knot is finished ; and then the pain goes off, at least so far as not to be more perceptible there than in any other part of the stump.

The convulsions which sometimes come on a few days after the operation, by no means appear to be owing to the ligature; for if they were, it is natural to suppose they would begin at the time, or immediately after it was made: I should therefore rather imagine them to be occasioned by the symptomatic fever ; and if it should be thought that the ligature might bring on that fever, and consequently the convulsions, I can only say, that every wound as large as that made by the amputation of a limb, must unavoidably produce a fever, which may be more or less violent in different constitutions ; and that I  
have



have known a great many instances of amputations where the ligature has been used, and the fever been as light as it possibly could, had it been omitted.

As to what is said with regard to the ligature's remaining fix'd to the last, and by that means becoming an impediment to the healing of the wound, I look upon as a very trifling objection: because, in the first place, I am very confident it but seldom happens; and in the next, whenever it does, it may, towards the latter part of the cure, be removed with great ease and safety.

By what has been said, I would on no account be understood to depreciate any gentleman's ingenuity; so far from it, that I think every attempt to improve so useful a profession as surgery deserves the highest commendation. The Agaric of the  
D oak

oak may doubtless have its good effects, and be of service to mankind, in a number of cases where the ligature cannot be applied ; but where it can, particularly in amputations, to prefer that to this, would, to me, appear in the last degree imprudent.

F I N I S.



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